We claim:

1. An apparatus for the examination of forensic specimens comprising:

   a light source, for illuminating said specimen;

   light gathering optics, for gathering light reflected, emitted, transmitted or scattered from said specimen;

   an electronically tunable filter, for transmitting light of specific, selected wavelengths;

   an image sensor for sensing an image , said image sensor having a predetermined number of pixels;

   a computer, said computer being coupled to said electronically tunable filter and said image sensor; and

   software, running on said computer for:

      tuning said electronically tunable filter to a specific wavelength or a series of specific wavelengths; and

      collecting and storing the intensity of said reflected, emitted, transmitted or scattered light at each of said pixels for each of said specific wavelengths to which said electronically tunable filter is tuned.

2. The apparatus of claim 1 wherein said light source is incident to or transmissive with respect to said specimen.

3. The apparatus of claim 2 wherein said light source emits light of a specific wavelength or range of wavelengths.

4. The apparatus of claim 1 wherein said light gathering optics comprises a microscope lens.

5. The apparatus of claim 1 wherein said light gathering optics comprises a macro lens.

6. The apparatus of claim 1 wherein said electronically tunable filter comprises one or more liquid crystal tunable filters.

7. The apparatus of claim 6 wherein the bandwidth of said liquid crystal tunable filter ranges from 5 cm^{-1} to 10 nm.

8. The apparatus of claim 1 wherein said electronically tunable filter comprises an acousto-optical tunable filter.

9. The apparatus of claim 1 wherein said image sensor is a two-dimensional imaging focal plane array.

10. The apparatus of claim 9 wherein said image sensor is a charge coupled device.

11. The apparatus of claim 9 wherein said image sensor is a gallium arsenide focal plane array detector.

12. The apparatus of claim 1 further comprising one or more mirrors for spatially directing said light reflected, emitted or scattered from said specimen.

13. The apparatus of claim 1 further comprising an optical train disposed between said light gathering optical and said electronically tunable filter for matching the spatial characteristics of said light reflected, emitted or scattered from said specimen to said electronically tunable filter.

14. The apparatus of claim 1 further comprising a display device for rendering images and graphical representations of said specimen.

15. The apparatus of claim 14 wherein said software further performs the function of composing an image for rendering on said display device, said image being composed of light reflected, emitted, transmitted or scattered from said specimen at a specific wavelength or a range of said one or more specific wavelengths to which said electronically tunable filter has been tuned.

16. The apparatus of claim 14 wherein said software further performs the function of composing a graphical representation of said forensic specimen for rendering on said display device, said graphical representation being a graph of intensity versus wavelength for a specific pixel or a grouping of a plurality of specific pixels.

17. A method of examining a forensic specimen comprising the steps of:

illuminating said forensic specimen;

tuning an electronically tunable filter to pass light of a specific wavelength or range of wavelengths, said light having been reflected, emitted or scattered from said specimen;

collecting said filtered light using an image sensor having a predetermined number of pixels;

storing the intensity of said collected light at each pixel on said image sensor.

18. The method of claim 17 further comprising the steps of:

tuning said electronically tunable filter through a predetermined range of wavelengths using a predetermined increment; and

storing, for each of said increments, the intensity of said collected light at each pixel on said image sensor.

19. The method of claim 18 further comprising the step of:

rendering, or a display device, an image of said collected light, said image representing the intensity of light collected for each pixel at a given wavelength or for a given range of wavelengths.

20. The method of claim 18 further comprising the step of:

rendering, on a display device, a graphical representation of said collected light, said graphical representation representing the a plot of intensity versus wavelength for a specific pixel of a grouping of a plurality of specific pixels.

21. The method of claim 19 further comprising the steps of:

for a specific wavelength or range of wavelengths, storing the average intensity of a portion of said collected light away from said specimen, representing the background upon which said specimen is resting; and

mathematically correcting said collected intensity data for said specific wavelength or range of wavelengths to remove the portion of said intensity values contributed by said background.

22. The method of claim 17 further comprising the steps of:

imaging a reference specimen; and

comparing the data collect from said specimen versus said reference specimen to identify said specimen.

23. The method of claim 17 further comprising the step of:

comparing said graphical representation to graphical representations of known substances, such that said specimen can be identified.

24. The method of claim 18 wherein the said specimen is a fingerprint disposed on a substrate.

25. The method of claim 24 further comprising the steps of:

storing the average intensity of a portion of said collected light reflected, emitted or scattered from said substrate; and

mathematically correcting said intensity data for said specific wavelength or range of wavelengths to remove the portion of said intensity values contributed by said substrate.

26. The method of claim 18 wherein said specimen is a fingerprint disposed on a substrate that is treated with a chemical enhancing agent.

27. The method of claim 26 further comprising the steps of:

storing the average intensity of a portion of said collected light reflected, emitted or scattered from said substrate; and

mathematically correcting said intensity data for said specific wavelength or range of wavelengths to remove the portion of said intensity values contributed by said substrate

28. The method of claim 18 wherein said specimen is suspected gunshot residue.

29. The method of claim 28 further comprising the steps of:

storing the average intensity of a portion of said collected light reflected, emitted or scattered from said the background of which said suspected gunshot residue is disposed; and

mathematically correcting said intensity data for said specific wavelength or range of wavelengths to remove the portion of said intensity values contributed by said background.

30. The method of claim 18 wherein said specimen is a fiber.

31. The method of claim 30 further comprising the steps of:

storing the average intensity of a portion of said collected light reflected, emitted , transmitted or scattered from said substrate; and

mathematically correcting said intensity data for said specific wavelength or range of wavelengths to remove the portion of said intensity values contributed by said substrate

32. The method of claim 18 wherein said specimen is condom lubricant.

33. The method of claim 32 further comprising the step of collecting Raman scattered light from said specimen.

34. The method of claim 33 further comprising the steps of:

storing the average intensity of a portion of said collected light reflected, emitted or scattered from said the background of which said suspected gunshot residue is disposed; and

mathematically correcting said intensity data for said specific wavelength or range of wavelengths to remove the portion of said intensity values contributed by said background.

35. The method of claim 18 wherein said specimen is a thin film chromatography plate.

36. The method of claim 35 further comprising the steps of:

storing the average intensity of a portion of said collected light reflected, emitted or scattered from said the background of which said suspected gunshot residue is disposed; and

mathematically correcting said intensity data for said specific wavelength or range of wavelengths to remove the portion of said intensity values contributed by said background.

37. The method of claim 18 wherein said specimen is ink.

38. The method of claim 37 further comprising the steps of:

storing the average intensity of a portion of said collected light reflected, emitted or scattered from said the background of which said suspected gunshot residue is disposed; and

mathematically correcting said intensity data for said specific wavelength or range of wavelengths to remove the portion of said intensity values contributed by said background.

39. The method of claim 18 wherein said specimen is a multi-layer paint fragment.

40. The method of claim 39 further comprising the steps of:

storing the average intensity of a portion of said collected light reflected, emitted or scattered from said the background of which said suspected gunshot residue is disposed; and

mathematically correcting said intensity data for said specific wavelength or range of wavelengths to remove the portion of said intensity values contributed by said background.